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EXAMINER

WANG, CHUN CHENG

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/566,138	Applicant(s) STREY ET AL.	
	Examiner Chun-Cheng Wang	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 17-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 17-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01/27/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-15 and 17-19 are pending. Claim 16 is cancelled.

Claim Objections

1. Claim 4 is objected to because of the following informalities: Change "...wherein aid hydrophobic..." to "...wherein **said** hydrophobic..."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 10-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Claim 10 recites the limitations "(E)" in line 2 and "(D)" in line 4. There is insufficient antecedent basis for those limitations in the claim.
5. Claims 10, 12 and 14 contain term "polyethoxylated C₁₃ oxo alcohol (C_{12/14}E₅)" which is not clear it is only meant for polyethoxylated C₁₃ oxo alcohol having unspecified number of ethylene oxide repeating units or C_{12/14}E₅ having only 5 ethylene oxide repeating units.
6. Claim 11 contains term "polyethoxylated decanol (C₁₀E₈)" which is not clear it is only meant for polyethoxylated decanol having unspecified number of ethylene oxide repeating units or C₁₀E₈ having only 8 ethylene oxide repeating units.

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7. Claim 13 contains term "polyethoxylated C₁₃ oxo alcohol (C_{12/14}E₆)" which is not clear it is only meant for polyethoxylated C₁₃ oxo alcohol having unspecified number of ethylene oxide repeating units or C_{12/14}E₆ having only 6 ethylene oxide repeating units.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-9, 14-15 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Varadaraj et al. (US 2003/0170512).

Varadaraj et al. '512 disclose emulsion compositions comprising hydrocarbon fuel, water and alkoxyolated alcohol surfactants for starting a reformer of a fuel cell system (Abstract).

Varadaraj et al. disclose a method to prepare a bicontinuous emulsion (read on claim 5) by mixing hydrocarbon, water and surfactant [0005]. A bicontinuous emulsion exhibits regions of water continuity and regions of hydrocarbon continuity. A bicontinuous emulsion is by character a micro-heterogeneous biphasic fluid [0016] (read on claim 1). Distilled and deionized water, i.e. 100% water, is suitable water source. Water-alcohol mixtures, water:alcohol ratio varies from 99.1:0.1 to 20:80, can also be used as water component of the emulsion (read on claim 2) [0018]. Hydrocarbons suitable for the emulsion can be obtained from crude oil refining processes. Low

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sulfur gasoline, diesel fuel (read on claim 3, 4 and 9), jet fuel, kerosene are examples of hydrocarbons that can be utilized to prepare the emulsion (read on claim 3) [0017]. Greater than 96% reduction in interfacial tension was observed indicative of the propensity for spontaneous emulsification of the water and hydrocarbon phases by these surfactants (read on claim 5) (Example 1, [0041]). Varadaraj et al. '512 disclose an emulsion composition for fuel cell system (read on claims 15 and 18) comprising, at least 40 wt % of hydrocarbon, from 30 to 60 wt % of water, and from 0.01 to 5 wt % of at least one surfactant (read on claim 5) selected from the group consisting of alkoxyated alkyl alcohols, i.e. $R-(CH_2)_n-O-(M-O)_m-H$ where R is a methyl group, n is 5-17 and m is from 2-50 (read on claim 14, where $M = CH_2-CH_2$, $m = 5$ and $n = 13$) alkoxyated alkyl mono esters, alkoxyated alkyl diesters and mixtures thereof, i.e. amphiphilic block copolymer (read on claims 6-9 and 14) (claim 1).

10. Claims 1-9, 15 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Varadaraj et al. (US 2003/0165722).

Varadaraj et al. '722 disclose a microemulsion compositions comprising hydrocarbon fuel, water and alkyl ethoxylated amine-alkyl salicylic acid complex surfactants for starting a reformer of a fuel cell system (read on claims 1 and 18) (Abstract). The microemulsion composition is a bicontinuous microemulsion comprising a coexisting mixture of at least 90 vol % of a water-in-hydrocarbon microemulsion and from 1 to 10 vol % of a hydrocarbon-in-water microemulsion (read on claim 1) [0004]. Distilled and deionized water is suitable for the microemulsion. Water-alcohol mixtures can also be used. The ratio of water:alcohol can vary from about 99.1:0.1 to about 20:80 (read on claim 2) [0018]. Low sulfur gasoline, naphtha, diesel fuel (read on claim 3, 4 and 9), jet fuel, kerosene are non-limiting examples of hydrocarbons that

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can be utilized to prepare the microemulsion (read on claim 3 and 4) [0019]. Greater than 96% reduction in interfacial tension was observed indicative of the propensity for spontaneous emulsification of the water and hydrocarbon phases by these surfactants (read on claim 5) (Example 1, [0036]). Varadaraj et al. '722 disclose one of the emulsion composition comprising, at least 40 wt % of hydrocarbon, from 30 to 60 wt % of water, and from 0.01 to 15 wt % of at least one surfactant selected from the group consisting of alkyl ethoxylated amine-alkyl salicylic acid complex, monoethanol amine-alkyl salicylic acid complex and mixtures (read on claims 5-9) (Claim 1).

11. Claims 1-9, 15 and 17-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Jakobs et al. ("Amphiphilic Block Copolymers as Efficiency Boosters for Microemulsions", Langmuir 1999, 15, 6707-6711).

Jakobs et al. disclose that block copolymers of the poly(ethylenepropylene)-*co*-poly(ethylene oxide) (PEP-PEO) type dramatically enhance the solubilization capacity of medium-chain surfactants, i.e. efficiency booster, in microemulsions, in the ternary system water-*n*-decane-C₁₀E₄. The effect exhibits itself in an enormous increase of the swelling of the middle phase with an associated increase in the structural length scale of the microemulsion (Abstract). Microemulsions are thermodynamically stable and macroscopically isotropic mixtures of at least three components: water, oil, and surfactant (read on claims 1-3, 5-8, 15 and 18). Jakobs et al. also disclose phase diagrams (page 6709, Figure 2). The determination of the phase diagrams is carried out in a thermostated water bath with temperature control up to 0.02 K. The sample composition is given by the oil in water plus oil mass fraction $\alpha = m_B / (m_A + m_B)$, the overall mass fraction of the surfactant (or surfactant/polymer mixture) $\gamma = (m_C + m_D) / (m_A + m_B +$

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$m_C + m_D$), and the mass fraction of the polymer in the surfactant/ polymer mixture $\delta = m_D/(m_C + m_D)$. All samples were prepared at $\alpha = 0.422$, corresponding to an oil/(water + oil) volume fraction $\Phi = 0.5$ (claim 17) (page 6708, Experiment, A. Phase Diagrams).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Varadaraj et al. (US 2003/0170512) in view of Allgaier et al. (US 6677293 as English translation of WO 00012660).

The disclosure of Varadaraj et al. '512 is adequately set forth in paragraph 9 and is incorporated herein by reference.

Varadaraj et al. '512 disclose use of surfactant $C_{13}E_5$ but is silent on the using it in (water +NaCl) and n-decane-AOT (sodium bis-(2-ethyl hexyl)-sulfosuccinate) system.

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Allgaier et al. disclose a microemulsion composition consisting of (water +NaCl) and n-decane-AOT-P5/5 (column 4, lines 49-51). P5/5: the alkyl chain has a molecular weight of 5000 g/mol (=u) and the poly-ethylene oxide chain has a molecular weight of 5000 g/mol (column 4, lines 1-6). FIG. 9 shows the increase in efficiency in an anionic surfactant system consisting of (water+NaCl) and n-decane-AOT-P5/5 (column 5, lines 62-64).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to utilize C₁₃E₅ with the (water +NaCl) and n-decane-AOT system to boost its efficiency in the same field of endeavor.

15. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Varadaraj et al. (US 2003/0170512) in view of Steinmann (US 2003/3307484).

The disclosure of Varadaraj et al. '512 is adequately set forth in paragraph 9 and is incorporated herein by reference.

Varadaraj et al. '512 is silent on additive ammonium carbonate.

Steinmann '7484 disclose ammonium carbamate, ammonium carbonate, ammonium bicarbonate and ammonia as the effective reducing agent for NO_x in the exhaust gas systems [0008].

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to utilize the teaching from Steinmann '7484 to add ammonium carbonate in the fuel composition to reduce toxic NO_x in the exhaust gas systems.

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16. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Varadaraj et al. (US 2003/0170512) in view of Filippini et al. (US 2002/0088167).

The disclosure of Varadaraj et al. '512 is adequately set forth in paragraph 9 and is incorporated herein by reference.

Varadaraj et al. '512 disclose the use of polyethoxylated decanol, $n=10$, $m=8$, but is silent on sorbitan monooleate.

Filippini et al. disclose use of cosurfactant sorbitan monooleate which is available commercially under the name Span 80 [0121] in emulsified water-blended fuel composition.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to incorporate the commercially available sorbitan monooleate as cosurfactant in the microemulsion fuel.

17. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Varadaraj et al. (US 2003/0170512) in view of Filippini et al. (US 2002/0088167) and Steinmann (US 6017368).

The disclosure of Varadaraj et al. '512 is adequately set forth in paragraph 9 and is incorporated herein by reference.

Varadaraj et al. '512 is silent on adding ammonium acetate and ammonium oleate.

Steinmann '368 disclose addition of ammonium oleate anionic surfactant not only increases the tolerance for water but also enhance the stability of the microemulsion fuel at subfreezing temperatures (column 12, lines 19-22).

Filippini et al. disclose water-soluble, ashless (i.e. metal-free), halogen-, boron-, and phosphorus-free ammonium salts such as ammonium acetate [0103] in emulsified water-blended

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fuel composition. The salt functions as an emulsion stabilizer ([0108], line 2) and combustion improver ([0109], line 2).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to utilize the teaching from Steinmann '368, i.e. use of ammonium oleate, and Filippini et al., i.e. addition of ammonium acetate, and combine with the microemulsion fuel of Varadaraj et al. to enhance the performance.

18. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Varadaraj et al. (US 2003/0170512).

The disclosure of Varadaraj et al. '512 is adequately set forth in paragraph 9 and is incorporated herein by reference.

Varadaraj et al. '512 is silent on the explosive.

Varadaraj et al. '512 disclose the microemulsion composition as a fuel, i.e. combustible. An explosive may consist of a mixture of an oxidizer and a fuel.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to incorporate the fuel in an explosive.

19. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jakobs et al. ("Amphiphilic Block Copolymers as Efficiency Boosters for Microemulsions", Langmuir 1999, 15, 6707-6711).

The disclosure of Jakobs et al. is adequately set forth in paragraph 11 and is incorporated herein by reference.

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The microemulsion Jakobs et al. disclosed could be a fuel. The hydrocarbon, n-decane, is flammable. An explosive may consist of a mixture of an oxidizer and a fuel.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to incorporate the fuel in an explosive.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Cheng Wang whose telephone number is (571)270-5459. The examiner can normally be reached on Monday to Friday w/alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ling-Siu Choi/
Primary Examiner, Art Unit 1796

Chun-Cheng Wang
Examiner, Art Unit 1796

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/CCW/